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NASA TECH BRIEF

Ceramic Materials Purified by Experimental Method

The problem: Purification of crystalline ceramic materials to enable their use as high-temperature electrical insulators.

The solution: A dc voltage is applied across the ceramic material while it is heated in an inert gas atmosphere. The impurities in the material migrate to the cathode.

How it's done: Experiments were made with 1/8-inch-thick samples of magnesia (MgO) and beryllia (BeO). The ends of each sample were maintained at a dc potential difference of 90 volts while the sample was heated to 1600°C in a nitrogen atmosphere.

X-ray analysis and visual examination indicated that impurities initially present in each sample had migrated toward the cathode end of the material.

Note: Inquiries concerning this innovation may be directed to:

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Reference: B65-10270

Patent status: NASA encourages commercial use of this innovation. No patent action is contemplated by NASA.

Source: Illinois Institute of Technology
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